

## Auxiliary lights in Volvo Amazon

AUXILIARY LIGHTS ARE A COMMON AND APPRECIATED accessory for the Volvo Amazon. Lights from the manufacturer Marshal are predominant for the earlier model years, Bosch for the later and for the 123GT – the only model with factory installed auxiliary lights – Volvo chose Hella. The combinations of lights vary. Search light in combination with curve light is common. On some markets (including Sweden) the 123GT has one search light in combination with one fog light and with individual switches. On other markets the 123GT has two fog lights, and so on. On cars in rally edition, four or more auxiliary lights are common.

The mounting in the front of the car also vary, from lights recessed in the grill (the quite rare accessory 281034-9) via two light mounts a la 123GT to complete light ramp common on rally cars.



*Grille with auxiliary lights*



*Volvo 123GT*



*Rally edition*

### Required parts

Normally, the auxiliary lights are controlled via relays. The wiring will be different depending on the combination of lights chosen. One search light in combination with one fog light will require two relays (one for each light) since they will be used independently of each other, while a search light in combination with a curve light will require only one relay (but this relay will have to be capable of handling the load of both lights). In the same manner, one or two switches are used to turn on/off the lights. On the 123GT these are located under the dash at the same place as the switch for the glove compartment light but on the driver side, but placements in various kinds of tunnel compartments are also common.

- One or more relays (for instance connections 30/51 85 86 87).
- One or more switches.
- Fuse, incl. fuse holder.
- Auxiliary lights.
- Mounts.
- Wiring.

Auxiliary lights generally draw a lot of current and the wiring, the relay and the fuse must therefore be dimensioned accordingly. The wire from +12 VDC via the fuse to the relay should be minimum 4 mm<sup>2</sup> and from relay to lights minimum 2.5 mm<sup>2</sup>. The guiding/triggering current to the relay will require a smaller area, maybe around 1.5 mm<sup>2</sup>. Use wires of different colors and state which color and what dimension you used in the wiring diagram for the car. Normally, red is used for the main current (between +12 VDC and the relay), black for earth/ground and blue for the guiding/triggering current. The fuse is normally dimensioned by dividing the effective output with the voltage and rounding up: two auxiliary lights of 55 W each should be protected by at least a 10 A fuse ( $2 \cdot 55 \text{ W} / 12 \text{ V} \approx 10 \text{ A}$ ).

The mounts for the lights need to be stable and robust in their construction and capable of keeping the lights in place at high speeds and on bumpy roads. The lights should be protected by some sort of cover – hard or soft – when they are not being used.

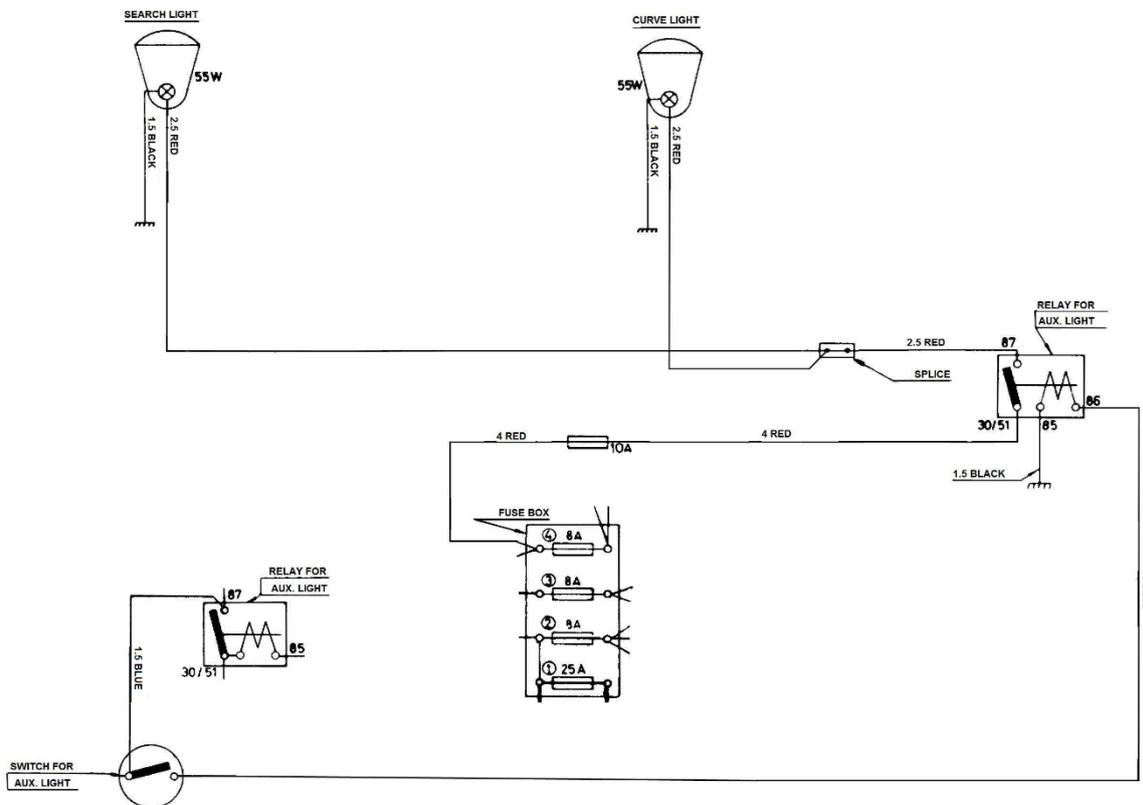
## Wiring

Start by disconnecting the battery and consult the wiring diagram of the car (it's usually found in the instruction book). The heart in this wiring will be the relay so start by finding a proper location for this. A relay can easily be fit in front of (but not behind) the existing relays on the front left fender in the engine compartment. If two relays are used it may be a good idea to place them next to each other. Do yourself a favor and mark the relay (use a pen and write on the lower end of the relay to make it less obvious). Wire a preferably black 1.5 mm<sup>2</sup> cable from ground to connection 85 on the relay.

Then wire (preferably red) 2.5 mm<sup>2</sup> cables from connection 87 on the relay to the auxiliary lights in a neat, discrete and non-obstructive way. Follow the existing cable harness forward along the left front fender and evenly cling the cables with cable ties. Connect the cables to the auxiliary lights. Also make sure that the auxiliary lights are properly grounded.

Wire a (preferably blue) 1.5 mm<sup>2</sup> cable from connection 87 on the head light relay first to a one pole switch inside the car. A good placement for this switch is under the dash in the same place but opposite side as the glove compartment light switch. Some (later) model years already have a hole drilled so all you need to do is fit the switch. Connect the cable on the switch. Continue with the same cable from the other end of the switch back into the engine compartment and to connection 86 of the auxiliary lights relay.

Now, all that remains is to power the auxiliary lights. Wire a (preferably red) 4 mm<sup>2</sup> cable from connection 30/51 on the auxiliary lights relay to the auxiliary lights fuse holder. Place a fuse of proper dimension in the fuse holder. Continue with the same cable from the fuse holder to +12 VDC at for instance the top fuse (25 A) in the fuse box. Connect the cable before the fuse, i.e. on the left side of the fuse box. Note that the fuse box in the wiring diagram of the car is drawn up-side-down.



Double check the wiring and reconnect the battery. If connected properly, search light and curve light should only come on together with the head lights. Don't forget to amend the changes to the wiring diagram of the car.



## Alignment

Align the auxiliary lights by parking the car some five yards in front of a wall. Turn on the auxiliary lights and align them with the head lights. Different rules apply in different countries, but generally the auxiliary lights may be aligned in any way sideways just as long as they are at the same height from the ground as the head lights. Most countries have requirements stating that auxiliary lights may only be used together with the head lights. Check what rules apply in your state/country and comply.

## Comments

- It is difficult to find relays with the right retro look. Most modern relays for cars are black, bulky and plastic. They do tend to be smaller, though, and so fitting a new relay into the hull of an old one is one popular variant of achieving the right vintage look. Suitable relays that fit are Volvo 683408 and 681576 from Volvo 140/164; both are at 30 A. Also Volvo 669102 and 672599 but then only one light per relay.



- It is extremely important that the relay is dimensioned for the current required by the auxiliary lights, not just momentarily but also over time (several hours of driving). Never buy a relay on which the current rating is not stated.
- For installations with other combinations of auxiliary lights (for instance one search light and one fog light), two relays and two switches should be used as these lights are used during different circumstances. The wiring is similar as to above.
- One single pole switch similar to the one used for the glove compartment light, but placed on the driver side can be used to control one search light and one curve light.



## Reference

- Wiring diagram.

*Waiver. The text in this summary has been prepared with uttermost care but is, despite of this, strictly a guide to be used in conjunction with normal and cautious vehicle shop practice, including the safe operation of electric equipment. I cannot accept liability for your actions. Work smart! Work safely!*